

## SPECIFICATION AMENDMENTS

On page 14, please replace the paragraph beginning on line 11 with the following:

-- In any of these applications, electrodes are deposited on the piezoelectric ceramic positioned and sized for the particular use of the resulting electronic device. Examples of electronic devices that can utilize the piezoelectric ceramics of the present invention are described and illustrated in ~~US Patent Application Serial No. \_\_\_\_\_ filed on~~  
~~US Patent Application Serial No. 10/686,120 filed on October 15, 2003~~  
(Attorney Docket Number 24076-3), and entitled "Ultrasonic Element Array"; US Provisional Patent Application Serial No. 60/478,649, filed on June 13, 2003 (Attorney Docket Number 24076-4), and entitled "Multi-Element Array for Acoustic Ablation"; and US Patent Application Serial No. ~~10/475,144~~ 60/475,144, filed on June 1, 2003 (Attorney Docket Number 24076-5), and entitled "Droplet Generation with a Piezoelectric Device", all of which are incorporated by reference herein in their entirety. --

On page 7, please replace the paragraph beginning on line 8 with the following paragraph:

-- The present invention provides novel compositions of piezoelectric ceramics that have advantageous use for high power applications. Existing high power piezoelectric ceramics do not exhibit suitable electromechanical properties to provide miniaturized devices such as ultrasonic devices and the like. With the miniature devices, the element sizes are often sufficiently small so the resulting capacitance of the piezoelectric ceramic is exceedingly small, and the electrical impedance is too high for useful or adequate electrical driving of many electrical devices. In contrast, the preferred compositions of the present invention can be characterized by exhibiting a high permittivity ( $\epsilon_r$ ) and/or a high mechanical quality factor ( $Q_m$ ). This, in turn, provides a high capacitance and low impedance for high electrical driving. In certain embodiments, the composition exhibits a relative permittivity of at least 2000 F/m; more preferably at least 2500 F/m. In other embodiments, the composition exhibits a mechanical quality factor ( $Q_m$ ) of at least 900. Still yet in other embodiments, the composition exhibits a piezoelectric strain constant ( $d_{33}$ ) of at least 300 PC/N. In addition, the dielectric loss factor ( $\tan$

δ) is sufficiently low to minimize internal heating effects, which can drain electrical power from the device and, in the worst case, cause the device to ultimately fail. --

On page 10, please replace the paragraph beginning on line 8 with the following paragraph:

-- In other embodiments, the ceramic of the present invention can include one or more dopant materials. The dopant materials can be selected to modify and enhance the electromechanical properties of the resulting piezoelectric ceramic. Alternatively, one or more of the dopants can be added to the precursors to facilitate and/or ease processing steps to formulate of the desired ceramic. The dopants can be added to the present composition in individual amounts up to about 10 weight percent (wt %) based upon the total weight of the piezoelectric ceramic material. More preferably the dopants are included in the ceramic compositions in individual amounts between about 0.01 wt % and about 2.0 wt % based upon the total weight of the starting, precursor materials. Examples of the dopants for use in the present invention include manganese, niobium, tellurium, molybdenum, tantalum, cobalt, and yttrium ceramics. More preferably, the dopants are provided by one or more of the following dopant precursors:  $\text{MnO}_2$ ,  $\text{Ni}_2\text{O}_3$ ,  $\text{TeO}_2$ ,  $\text{MoO}_3$ ,  $\text{Nb}_2\text{O}_5$ ,  $\text{Ta}_2\text{O}_5$ ,  $\text{CoCO}_3$ , and  $\text{Y}_2\text{O}_3$ . One preferred composition includes up to about 0.3 wt %  $\text{MnO}_2$ , based upon the total weight of the starting precursor. Another preferred composition includes up to about 1.6 wt %  $\text{Nb}_2\text{O}_5$ , again, based upon the total weight of the starting precursor. Yet another preferred composition includes between about 0.2 and about 0.4 wt %  $\text{MnO}_2$  and between about 1.4 and about 1.8 wt %  $\text{Nb}_2\text{O}_5$ . --